

# BREEAM COMPLIANCE PRODUCT CARD

## Technical insulation



TECHNICAL  
INSULATION



HEATING  
& SANITARY

## Tubolit insulation products (Tubolit DG B1, Tubolit DG, Tubolit S, Tubolit S+, Tubolit AR Fonoblok, Tubolit AR Fonowave)

Products from Tubolit Family are a low smoke polyethylene insulation for effective energy saving on heating and plumbing installations<sup>1</sup>.

## BREEAM International New Construction 2016

BREEAM is a multi-criteria scheme to assess and certify buildings. Established in UK, it emphasises sustainable development by promoting green, healthy and eco-friendly buildings. Features of the buildings which may be assessed are: materials, quality of indoor environments and energy efficiency etc. Nowadays it has become a standard in real estates markets.









BREEAM compliance card for **Tubolit Family** products were prepared to assist designers, architects, engineers, consultants and developers to provide clear information and to facilitate choosing proper product. Appropriate BREEAM categories related to Tubolit Family products features were chosen and checked. Tubolit Family products compliance and contribution to BREEAM categories are presented below.



Product compliant



Product contributes to a better rating

BREEAM Category	Issue	BREEAM Requirements	Credits	Product compliance	
Indoor air quality: Minimising sources of air pollution	Hea 02	At least four of five finishing materials should meet appropriate volatile organic compounds (VOC) emission levels and confirm compliance with testing standards ISO 10580, ISO 16000-9, CEN/TS 16516 or CDPH Standard Method v1.1. VOC emission limits for insulation were listed in Tables 17 and 18 of BREEAM International NC 2016 Manual.	3•	Sampling, testing and evaluation were performed according to ISO 16000-9. Insulation meets exemplary level emission limits <sup>2</sup> : - Formaldehyde < 0,01 mg/m <sup>3</sup> - Total volatile organic compounds < 0,3 mg/m <sup>3</sup> - Total semi-volatile organic compounds < 0,1 mg/m <sup>3</sup> - Category 1A and 1B carcinogens < 0,001 mg/m <sup>3</sup>	
Responsible sourcing of construction	Mat 03	Construction materials should be responsibly sourced. A responsibly sourced confirmation of „supply chain process“ and „key process“ should be provided.	4•	Tubolit Family products are responsibly sourced which may be confirmed with ISO14001 <sup>3</sup> certificates - supply chain process (polymer) - key process (insulation production).	
Material efficiency	Mat 06	In order to minimise materials' environmental impact more efficient materials should be used during building design, procurement, construction, maintenance and end of life.	1**	Tubolit products as a part of building energy system has the following efficiency features: - a service life is more than 50 years, - it may be damaged only by extraordinary impacts or during installation.	
Thermal comfort	Hea 04	A thermal comfort analysis should be carried out to assess if the indoor environment maintains comfortable conditions for building users in terms of appropriate thermal comfort level according to ISO 7730:2005.	3**	Tubolit products are a part of building's systems. Adjusting proper design parameters will enable to improve energy efficiency and its supply to the system appliances. For energy efficiency the main parameter of Tubolit DG, Tubolit DG B1, Tubolit S is thermal conductivity $\lambda_{40^{\circ}\text{C}} \leq 0,04 \text{ W/mK}^1$ , Tubolit S+, Tubolit AR Fonowave, Tubolit AR Fonoblok $\lambda_{40^{\circ}\text{C}} \leq 0,045 \text{ W/mK}$ .	
Reduction of energy use and carbon emissions	Ene 01	An energy performance should be carried out to assess building energy consumption during operation in comparison with the following requirements: notional building (parameters defined by national standards) and BREEAM best practice building (BREEAM defined parameters).	15**		
Energy efficient cold storage	Ene 05	Greenhouse gas emissions from cold storage systems should be reduced by improving their energy efficiency.	3**		
Life cycle impacts	Mat 01	An environmental impact of construction materials over the building life cycle should be specified by using an appropriate life cycle assessment (LCA) tool.	5**	Data useful for life cycle assessment (LCA) may be found in EPD <sup>2</sup> . Life cycle assessment in EPD has been carried out in GaBi Software (LCA tool), which is based on ISO 14025 standard and addresses the whole life cycle of product, including disposal.	
		At least five products out of ten material categories, including insulation products, should have Environmental Products Declarations (EPD). In one material category maximum two products' EPDs may be counted. The EPD must be compliant with ISO 14025, ISO 21930 or EN 15804.	2•	Using Tubolit products (excluding Tubolit S) with other products having EPD will help to score a credit. Tubolit products EPD <sup>2</sup> is compliant with ISO 14025 and ISO 15804.	

For detailed information please refer to the documents provided by manufacturer:

<sup>1</sup> Tubolit products cards

<sup>2</sup> Eurofins Product Testing A/S Attestation and Test reports

<sup>3</sup> ISO 14001 certificates are available for the factory in Środa Śląska (Poland) as well as for main polymers production.

[www.armacell.com](http://www.armacell.com)

\*Tubolit products have a direct impact on the following categories. While using Tubolit products with another appropriate products - credits stated above may be awarded. Maximum number of credits influenced by the product for each category was stated above.

\*\* Tubolit products have an indirect impact on the following categories. Using Tubolit products with another appropriate products may contribute to achieve credits. Maximum number of credits influenced by the product for each category was stated above.

# LEED COMPLIANCE PRODUCT CARD

## Technical insulation



TECHNICAL INSULATION



HEATING & SANITARY

### Tubolit insulation products (Tubolit DG B1, Tubolit DG, Tubolit S, Tubolit S+, Tubolit AR Fonoblok, Tubolit AR Fonowave)

Tubolit insulation products are a low smoke polyethylene insulation for effective energy saving on heating and plumbing installations<sup>1</sup>.

## LEED v4

### for Building Design and Construction

LEED is a multi-criteria scheme to assess and certify buildings. Established in USA, it emphasises sustainable development by promoting green, healthy and eco-friendly buildings. Features of the buildings which may be assessed are: materials, quality of indoor environments and energy efficiency etc. Nowadays it has become a standard in real estates markets.





LEED compliance product card for **Tubolit** products were prepared to assist designers, architects, engineers, consultants and developers to provide clear information and to facilitate choosing proper product. Appropriate LEED categories related to Tubolit products features were chosen and checked. Tubolit products compliance and contribution to LEED categories are presented below.



Product compliant



Product contributes to a better rating

LEED Issue	Credit	LEED Requirements	Points	Product compliance
EA Prerequisite Minimum Energy Performance	Option 1. Whole-building energy simulation	An energy calculation should be carried out based on a simulation model in accordance to the ANSI/ASHRAE/IESNA Standard 90.1-2010, Appendix G with errata. An improvement of 5% (new construction projects), 3% (major renovations projects), 2% (core and shell projects) over a baseline should be demonstrated.	-	Tubolit products are a part of building's systems. Adjusting proper design parameters will enable to improve energy efficiency and its supply to the system appliances. For energy efficiency the main parameter of Tubolit DG, Tubolit DG B1, Tubolit S is thermal conductivity $\lambda_{40^\circ\text{C}} \leq 0,04 \text{ W/mK}^1$ , Tubolit S+, Tubolit AR Fonowave, Tubolit AR Fonoblok $\lambda_{40^\circ\text{C}} \leq 0,045 \text{ W/mK}$ .
EA Optimize Energy Performance	Option 1. Whole-building energy simulation	Building's energy performance calculated using computer simulation model should demonstrate an improvement in comparison to the baseline. Number of points awarded depends on percentage improvement.	18**	
EQ Thermal Comfort	Thermal Comfort Design Option 2. ISO and CEN Standards	A thermal comfort analysis should be carried out in accordance to the standards: ISO 7730:2005 and EN 15251:2007.	1**	
MR Building Product Disclosure and Optimization – Material Ingredients	Option 2. Material Ingredient Optimization	At least 25%, by cost, of the total value of permanently installed products should have a confirmation of using one of the paths for material ingredient optimization, as below: - GreenScreen v1.2 Benchmark, - Cradle to Cradle Certified, - International Alternative Compliance Path - REACH Optimization - USGBC approved program	1*	Tubolit products are using the International Alternative Compliance Path - REACH Optimization. Tubolit products do not contain substances meeting REACH criteria for substances of very high concern, listed on the REACH Authorisation or Candidate list <sup>2</sup> . 
EQ Low-Emitting Materials	Option 1. Product category calculations	Up to 7 product categories of finishing materials should be compliant with relevant volatile organic compounds (VOC) emission levels and testing standards: - CDPH Standard Method (2010) or - German AgBB Testing and Evaluation Scheme (2010) or - ISO 16000-3/6/9/11:2010 in conjunction with AgBB or French legislation on VOC emission class labeling or the DIBt testing method (2010).	3*	Tubolit products have been tested <sup>3</sup> in accordance to: ISO 16000-3/6/9/11:2010 in conjunction with the German AgBB Testing and Evaluation Scheme (2012), DIBt (2010) and French legislation on VOC emission class. Product complies with limit values of the AgBB and DIBt regulations. For the French regulation emission class is A+. 
MR Building Product Disclosure and Optimization – Environmental Product Declarations	Option 1. Environmental Product Declarations (EPD)	At least 20 materials sourced from 5 different manufacturers should have product specific Type III EPD. EPD should conform standards: ISO 14025, ISO 14040, ISO 14044 and EN 15804, at least cradle to gate scope and include an external verification.	1*	Tubolit products have got an EPD <sup>2</sup> with a third party certification (Type III) in accordance to ISO 14025 and EN 15804 and includes an external verification. A cradle to gate scope has been provided (excluding Tubolit S). 

For detailed information please refer to the documents provided by manufacturer:

<sup>1</sup> Tubolit products card

<sup>2</sup> Manufacturer statement

<sup>3</sup> Eurofins Product Testing A/S Attestation and Test reports

**Tubolit products have a direct impact on the following categories:** While using Tubolit products with another appropriate products - credits stated above may be awarded. Maximum number of credits influenced by the product for each category was stated above.

**Tubolit products have an indirect impact on the following categories:** Using Tubolit products with another appropriate products may contribute to achieve credits. Maximum number of credits influenced by the product for each category was stated above.